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The Commercial Bait Industry in Ontario

STATISTICAL REPORT, 2002

 **Ontario**
Ministry of
Natural Resources




ONTARIO MINISTRY OF
NATURAL RESOURCES:
FISHERIES SECTION

Peterborough, Ontario

BAIT ASSOCIATION
OF ONTARIO

Peterborough, Ontario



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Introduction: This report was prepared by the Bait Association of Ontario (BAO) in cooperation with the Fisheries Section of the Ontario Ministry of Natural Resources (OMNR). The purpose of this report is to provide a statistical overview of the commercial bait industry in Ontario for the year 2002. The report is intended to be a useful tool for the industry and for the OMNR. The report is divided into two main sections: a description of the industry and a statistical summary of the industry's production and sales. The first section provides a general overview of the industry, including its history, its current status, and its future prospects. The second section provides a detailed statistical summary of the industry's production and sales, including data on the number of bait producers, the types of bait produced, and the volume of bait sold.

The Bait Association of Ontario (BAO) is a non-profit organization that represents the interests of the commercial bait industry in Ontario. The BAO was founded in 1982 and has since then been working to promote the industry and to ensure that it is properly regulated. The BAO has a number of committees and working groups that are responsible for various aspects of the industry, including research, education, and advocacy.

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Fisheries Section
Fish and Wildlife Branch
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INTRODUCTION

Anglers in Ontario, as in many other parts of North America, have a long tradition of using live bait. Ontario supports a diverse and productive freshwater bait industry that is spread across the province. There are approximately 675 bait harvesters who wholesale bait, many of whom also retail from their premises. In addition, there are about 750 dealers who retail bait to anglers. Bait includes minnows, suckers, herring, crayfish, leeches, and frogs. Worms are also harvested and sold in Ontario but they are a non-regulated species and, therefore, are not included in this report.

The bait resource in much of the province is allocated to harvesters through the exclusive use block system, with block sizes generally much larger in the north than in the south. There are many exceptions to the block system (mostly in southern Ontario) where the resource is allocated to multiple users fishing the same areas. Businesses engaged in the harvest and sale of bait are required to have a valid commercial bait harvester or dealer licence issued by the Ontario Ministry of Natural Resources (OMNR) and must report their harvest and sales.

Lack of knowledge of bait harvests is common in many jurisdictions across North America (Goodchild, 1996). Similarly, the estimated harvest and value of the industry in Ontario has been difficult to determine. This is due to inaccurate reporting or underreporting on the part of the bait industry and inconsistent requirements for reporting amongst OMNR licence issuing offices. Portt (1985) found that sustainability of the bait-fish resource could be put at risk, particularly where more than one bait harvester operates in the same area. He concluded that a biological basis for the effective management of bait-fish was lacking. Desjardine (1978) noted that management of bait was plagued by a paucity of sound data on which to make management decisions. An improved system of reporting was needed to provide basic information to ensure resource sustainability and a viable bait industry in Ontario.

Over the past few years, the OMNR and the Bait Association of Ontario (BAO) have been working together to improve the data collection for the harvest and sales of bait. Prior to 2002, the reporting of bait information has been sporadic, inconsistent and believed to undervalue the importance of the industry in Ontario.

This report provides a background to the bait industry in Ontario, a summary of efforts to improve reporting of data, and the results from the 2002 commercial bait annual returns.

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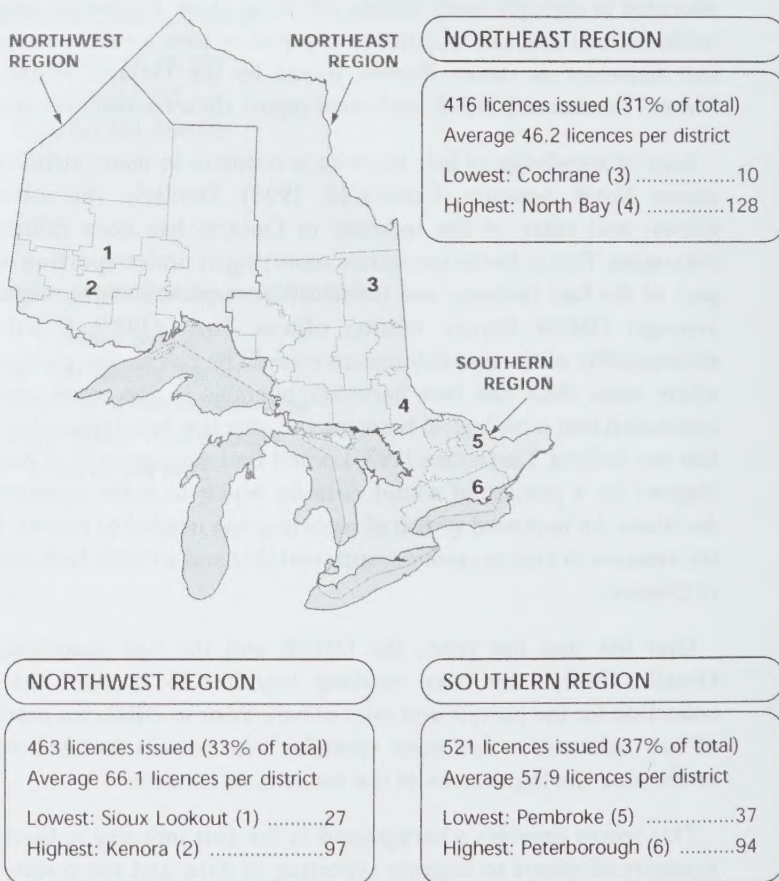
The bait industry in Ontario has expanded over the years in response to the growing demand for a variety of bait species.

LICENCE SALES

The bait industry in Ontario has expanded over the years in response to the growing demand for a variety of bait species. For example, in the book "About Bait-fish in Ontario" published in 1976, leeches were treated as a parasite and a nuisance to the bait industry (Wallace, 1976). Today leeches are a regulated species in high demand across Ontario.

The earliest year for which records are available is 1925 when 99 licences were issued for the harvest and sale of bait-fish (Payne, 1965). Since then the bait industry has grown and has stabilized at about 1,400 licensees per year for the past five years (OMNR, 2003).

A summary of the number of licences issued in Ontario in the three administrative regions in 2003 is shown below.



Comparisons amongst the three OMNR regions in this report is for administrative purposes only. The size of each region and the number of waterbodies each region contains is quite different, so direct comparisons cannot be made.

There are four types of annual commercial bait licences in Ontario. A **commercial harvest licence** allows operators to harvest and sell bait, both wholesale and retail. This licence costs \$300.00 plus \$32.50 for each Bait Harvest Area (BHA). A **commercial bait dealer's licence** permits operators to buy bait directly from harvesters and sell wholesale to other dealers or through retail outlets directly to anglers. This licence costs \$150.00. For tourist operators who sell bait only to their guests, the cost of a **tourist harvester licence** is \$30.00 plus \$32.50 for a BHA, and for a **tourist dealer**, \$30.00.

The total number of licence sales by licence type is shown in Figure 1. Total revenue from licence sales is about \$350,000 annually. The regular harvester licence accounts for about 75% of the total revenue from licence sales (Figure 2).

The number of commercial bait licences issued appears to have stabilized around 1,400 per year. In 2002, there were an additional 771 individuals named as co-licensees on the licence for a total of 2,155 licensees in the province. Licence revenues remain lower than projected due to the decrease in the number of licences issued after 1999 following the fee increase and the much higher number of tourist licences issued than initially expected. Tourist licences account for 27% of the number of licences issued but only about 4% of the revenue generated (OMNR, 2003).

Figure 1

Number of commercial bait licences issued by licence type in Ontario, 2002.

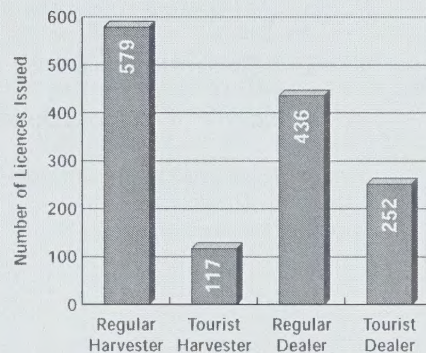
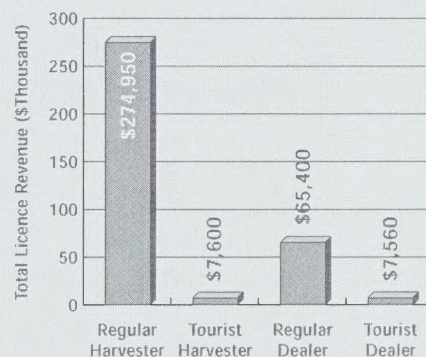


Figure 2

Total licence revenue by commercial bait licence type in Ontario, 2002.



Despite legislation which requires reporting by bait harvesters and dealers as a licensing condition, the industry suffers from unlicensed harvest and sale of bait and through incomplete or inaccurate annual reporting by some operators.

BAIT HARVEST IN ONTARIO

There is a considerable lack of knowledge regarding the numbers of bait-fish harvested and the real value of the bait-fish industry in most jurisdictions in North America. Despite legislation which requires reporting by bait harvesters and dealers as a licensing condition, the industry suffers from unlicensed harvest and sale of bait and through incomplete or inaccurate annual reporting by some operators (Goodchild, 1996).

Assessment of the size and value of the bait industry in Ontario is compromised in several ways. All licensed resident anglers can harvest bait for personal use using either a bait-fish or leech trap. This bait harvest is unreported and in some areas, particularly northern Ontario, it is believed that this harvest may equal or exceed commercial harvest (Dennis Wilker, pers. comm.).

Statistics on retail sales are confounded by some operators selling bait-fish by the dozen where a dozen is simply a scoopful of far more than 12 fish. Harvest data includes bait-fish, principally emerald shiners and spottail minnows, exported in large shipments to the United States. Such fish have no recorded retail value as they are not sold in Ontario. This is a major factor contributing to the discrepancy between reported harvest and sales.

Additional causes of incomplete or inaccurate reporting of harvest and sale of bait are:

Bait Operators

- Historical lack of standardized reporting system for species and volumes of bait resulting in changing forms and requests for information.
- Underreporting by some bait harvesters since they believe that revenue will be reported to other government agencies responsible for the collection of taxes, or that harvest data may be used against them, for example, restricting harvest.
- The assumption that no use is made of the data, hence no need for accurate reporting.
- Some operators may believe that their personal information is not secure and is not treated confidentially by OMNR.

OMNR District/Area Offices:

- Inconsistent approach by OMNR Districts for ensuring that the bait reports are filled out accurately and submitted on time.
- Lack of enforcement against noncompliant operators.
- Bait enforcement is not a high-priority in some parts of Ontario resulting in poor communication between OMNR and the bait operators on the need for accurate and complete reporting.

Due to these factors, estimating the actual harvest of bait species is extremely difficult. Earlier studies indicated that a minimum of 7.4 million dozen bait-fish were reportedly harvested in 1994. This was down from the 11.4 million dozen reportedly harvested in 1985 (Goodchild, 1996).

The need for detailed reporting, careful monitoring and/or concern for the amount of resource taken varies greatly from north to south. The northern management philosophy is that each harvester has the ability and responsibility to “manage” his or her area. In the south the number of harvesters on each area has resulted in a classic “tragedy of the commons” that resulted in a OMNR approach of using licence and gear restrictions as a direct management tool, but with very little knowledge of the bait resource sustainability (Thede, 1998).

Since 1998, the BAO and the OMNR have been working together to improve the annual reporting of bait harvest and sales in the province. It was thought that standardizing methods of reporting as well as instituting data standards and a province-wide system for data storage and retrieval would help provide the impetus for improved and more reliable reporting of harvest and sales data throughout Ontario.

Two approaches were taken. The first was to increase accuracy of the annual return by providing a Bait Harvest Daily Log to record all harvests on a daily basis, that could then be easily rolled up into an annual summary. The second was to provide an enforcement tool to ensure better reporting of purchases of bait between bait operators.

In 2000, the Bait Harvest Daily Log was introduced to increase the accuracy of the annual returns. Despite the introduction of the log, the accuracy and completeness of the annual returns continued to be disappointing, thus making data analysis difficult. For the 2001 reporting year, it is estimated that about 30% of the returns were incomplete and that several returns were not submitted to OMNR.

In 2002, a Bait Dealers Daily Log was introduced that required all bait purchases by bait dealers to be recorded (Appendix I). This was primarily an enforcement tool to improve the recording of purchases of bait by bait dealers. Bait dealers now had to account for the bait they had on hand through the log book. The Bait Harvest Daily Log was also modified in 2002 to make the reporting of data more rigorous and less subject to error (Appendix II). The Annual Reports were also changed to make it easier to complete and to record the vital information relating to harvest and sale of bait (Appendix III and IV) and to allow bait operators to report in gallons, dozens or pounds of bait, since the method of measurement varied considerably across the province. Other related socio-economic information (e.g., capital, staff, equipment values) was deleted from the previous forms. This type of information is planned to be collected through a separate legislated survey of the bait industry in the near future.

In 2000, the Bait Harvest Daily Log was introduced to increase the accuracy of the annual returns.
In 2002, a Bait Dealers Daily Log was introduced that required all bait purchases by bait dealers to be recorded.

Figure 3

The number of licences issued by each OMNR Region, number of annual returns received and number of incomplete returns in 2002.

NORTHWEST REGION

Licences	465
Returns Received	463
Returns Incomplete	5

NORTHEAST REGION

Licences	409
Returns Received	412
Returns Incomplete	12

SOUTHERN REGION

Licences	507
Returns Received	498
Returns Incomplete	10

PROVINCIAL TOTALS

Licences	1,381
Returns Received	1,373
Returns Incomplete	27

Bait types were also more clearly defined in 2002. Emerald shiners were listed separately from other bait-fish due to their importance to the industry and to better enable long term monitoring of harvests from Lakes Erie and Simcoe. Leeches, frogs, crayfish and lake herring were also treated separately to obtain better data on the harvest and sales of these species. Worms are not a regulated bait species so are not recorded. A decision was also made that required harvesters to record sales information only at the retail level. This avoided the double counting of sales (wholesale and retail) and would better represent the true retail value of the industry.

In 2002, OMNR made a concerted effort to obtain all annual returns through education (mail-outs), follow up contact with licence issuing offices and increased enforcement of the regulations. In Ontario, all commercial bait licensees are to report to OMNR on the Annual Return for Commercial Bait Harvesters and Retailers by January 31st of the year following the licence expiry. In 2003, 22 charges were laid for failing to submit an annual return compared to 20 charges over the previous four years.

The total number of licences and returns for 2002 is shown in Figure 3. Eight returns were not received and 27 were deemed incomplete resulting in the data in this report being based on 97.5% of the returns. In the northeast region, three more returns were received than the number of licences issued. This could be due to the bait operator not obtaining a licence and completing and submitting the return, or the original licence did not form part of the data base. Incomplete returns contained insufficient or unreliable information and are not used in this report.

On many returns there were data missing, particularly in relation to the value of bait sold. Other errors included reporting of wholesale instead of retail value. To provide consistency to the data and to fill in missing information, a conversion formula from gallons and pounds to dozens was used as well as an average price per dozen for the various bait types.

The conversion table for converting bait-fish and leeches to dozens is as follows:

Bait-fish and emerald shiners

1 pound	6 dozen
1 gallon	60 dozen

Leeches

1 pound	20 dozen
---------------	----------

Average price per dozen

Bait-fish and emerald shiners	\$3.50
Leeches	\$4.00
Frogs	\$7.00
Crayfish	\$3.00
Lake herring	\$7.00

PROVINCIAL SUMMARY

A provincial summary of bait harvested and sold appears in Figure 4.

According to the annual return information, about 87% of the bait-fish harvested are sold. This discrepancy could be due to some mortality of bait from the time it is harvested to the time it is sold.

Another factor could be the way the bait is measured. It is usually harvested and reported in gallons and pounds, which are less accurate ways of measuring than the retailer who sells bait by the dozen. Consequently the estimate of bait harvested is probably lower than the actual harvest. Emerald shiners have a higher handling mortality than regular bait-fish which could account for the larger difference between harvest and sales. It is also likely that the harvesters reported harvesting emerald shiners, but the retailers are selling them as mixed bait and not reporting them as emeralds shiners.

In some areas, emerald shiner harvests may be as much as one-half comprised of spottail minnows, thus some of the emerald shiner harvest may be retailed as mixed minnows.

Conversely, the number of leeches reported sold is considerably more than the reported harvest. There were approximately 824,000 dozen more leeches reported sold than harvested. In addition to the harvester/dealer estimates indicated above, this difference is largely due to the large amount of leeches that are imported into Ontario from the United States. These leeches would not show up on the harvester returns, but would appear as retail sales at the dealer level. This is similar to the levels estimated by the BAO for the 2001 returns at 21% of the leech market being domestic leeches. Similarly, the number of frogs, crayfish and lake herring harvested is less than that reported sold at approximately 80%, 77%, and 66%, respectively. This is harder to explain since the units of measurement for these three bait types are the same for harvesters and dealers (all dozens) and are sold as individual animals. There is also no import of these baits. This discrepancy is likely due to poor quality recording or harvesters underestimating the volumes of bait harvested.

Figure 4

Provincial summary of bait harvested and sold in Ontario from the 2002 annual bait returns.

BAIT-FISH

Total dozens harvested	3,500,164
Total dozens sold	3,069,461

EMERALD SHINERS

Total dozens harvested	1,695,578
Total dozens sold	713,957

LEECHES

Total dozens harvested	339,967
Total dozens sold	1,164,237

FROGS

Total dozens harvested	6,924
Total dozens sold	8,657

CRAYFISH

Total dozens harvested	16,726
Total dozens sold	21,731

LAKE HERRING

Total dozens harvested	5,665
Total dozens sold	8,602

Figure 5

Percent total bait harvest by bait type measured in dozens, Ontario, 2002.

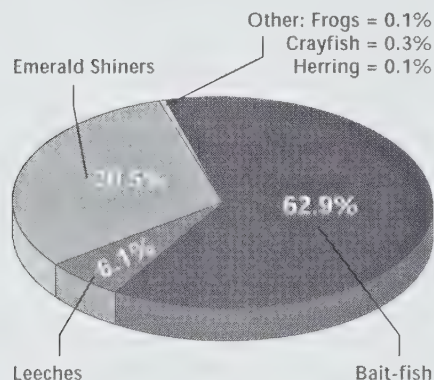
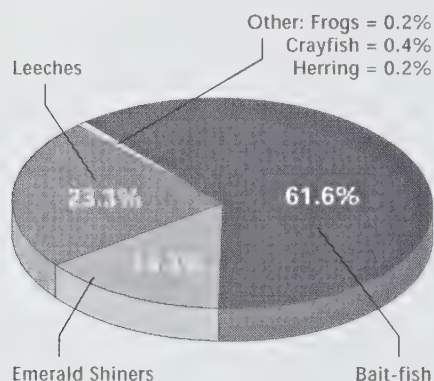


Figure 6

Percent total bait retailed measured in dozens, Ontario, 2002.



Bait-fish and emerald shiners account for about 93% of the volume of bait harvested when all bait is converted to dozens (Figure 5).

Leeches make up about 6.1% of the harvest. The other three bait types, combined are only one-half of one percent of the total bait harvested. Recent changes to frog regulations has resulted in a drop in frog harvest and sales, although the magnitude of the decline is unknown since frogs were not reported previously. Currently, only northern leopard frogs (*Rana pipiens*) may be harvested or sold under the authority of a commercial bait licence. Only commercial bait harvest licence holders in eastern Ontario are allowed to harvest frogs. Commercial frog harvesters in the approved locations are not restricted to their BHAs. They may harvest frogs anywhere on Crown land and private land where permission has been granted. Dealers who reside outside the above areas can sell frogs on their licence, but the frogs must be purchased from a licensed harvester, who has harvested frogs from inside the approved area.

In terms of bait sold (Figure 6), bait-fish and emerald shiners comprise 75.9% of the sales by dozen. Leeches form a much higher percentage of the total amount of bait sold (23.3%), compared to the percent harvested (6.1%), primarily due to the import of leeches. The other three bait types combined make up less than one percent of the total sales by dozen.

Overall, bait harvest from OMNR's southern region is much higher than the two northern regions (Figure 7). This is due primarily to the large harvest of emerald shiners from Lake Erie and Lake Simcoe.

The following is a summary of bait types harvested by OMNR Region.

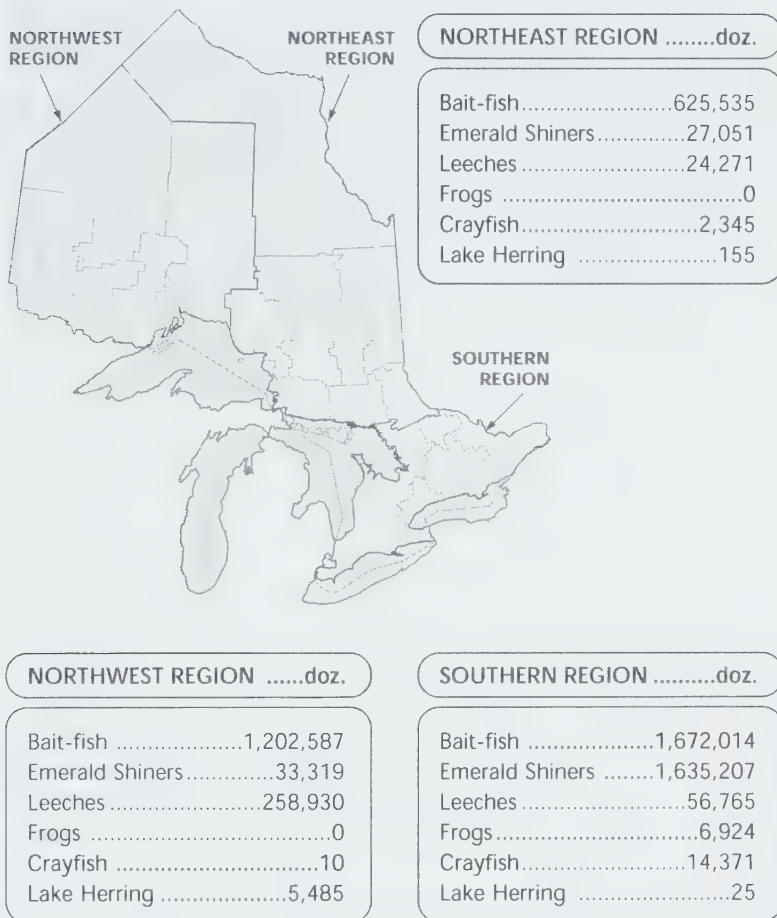


Figure 7

Total bait harvested in three OMNR regions, 2002.

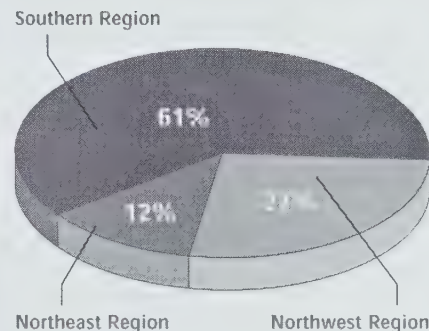
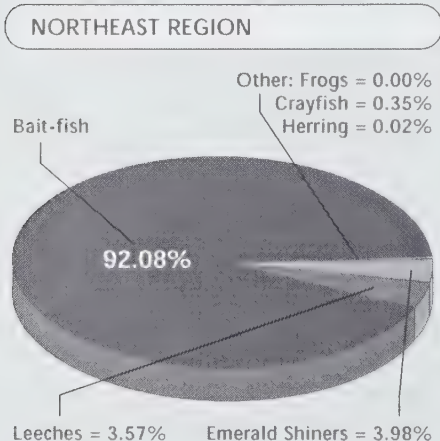
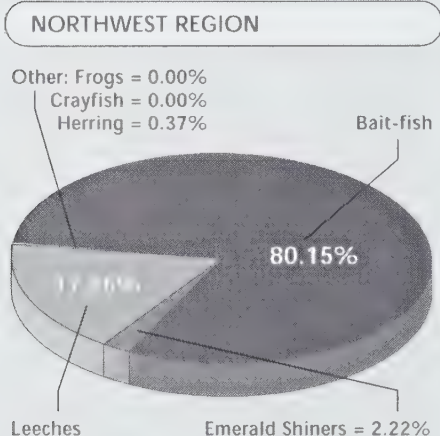
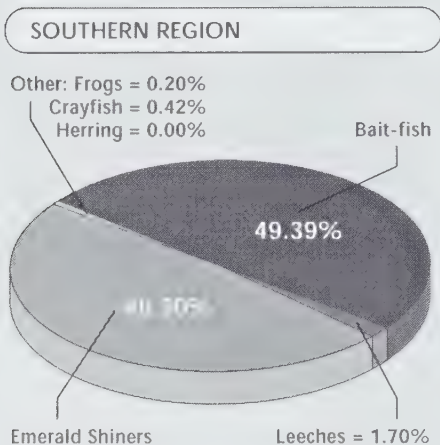


Figure 8

Total bait harvested by type in the three OMNR Regions, 2002.



The relative contributions of bait varies considerably across Ontario (Figure 8). Bait-fish, including emerald shiners make up most of the catch in all three regions, being 97.5% in SR, 82.4% in the NWR and 96.1% in the NER. The contribution of emerald shiners, however, is very high in the SR making up 48.3% of the catch, whereas it is only 2.2% and 4.0% in the NWR and NER, respectively. This is due to the large harvest of emerald shiners from Lake's Erie and Simcoe.

The domestic leech harvest is the most important to the bait industry in the NWR, where it comprises 17.3% of the catch whereas in the NER and the SR it comprises only a small percentage of the harvest at 3.6% and 1.7% of the harvest, respectively.

The remaining bait types (frogs, crayfish and herring) make up less than one percent of the catch in each of the three regions.

Figure 9 shows the relative breakdown of bait harvest by species across the three OMNR Regions.

In terms of bait harvest by bait types, almost half of the bait-fish (which could include some emerald shiners) comes from the SR. In addition, 96% of the emerald shiner harvest is from the SR, with only 2% of the harvest coming from the other two regions. Leeches, however, come primarily from NWR where 76% of the harvest occurs with only a small percentage coming from SR. Most of the crayfish are harvested in SR reflecting their value as a preferred bait for smallmouth bass in southern Ontario. Only a very small percentage of crayfish are harvested in northern Ontario, with only 0.1% in NWR. Lake herring are harvested primarily in NWR (97%) where they are a popular bait for lake trout fishing. Frogs are not shown in Figure 9 since all of the harvest occurs in southeastern Ontario.

Figure 9

Total bait harvest by bait type in the three OMNR Regions, 2002.

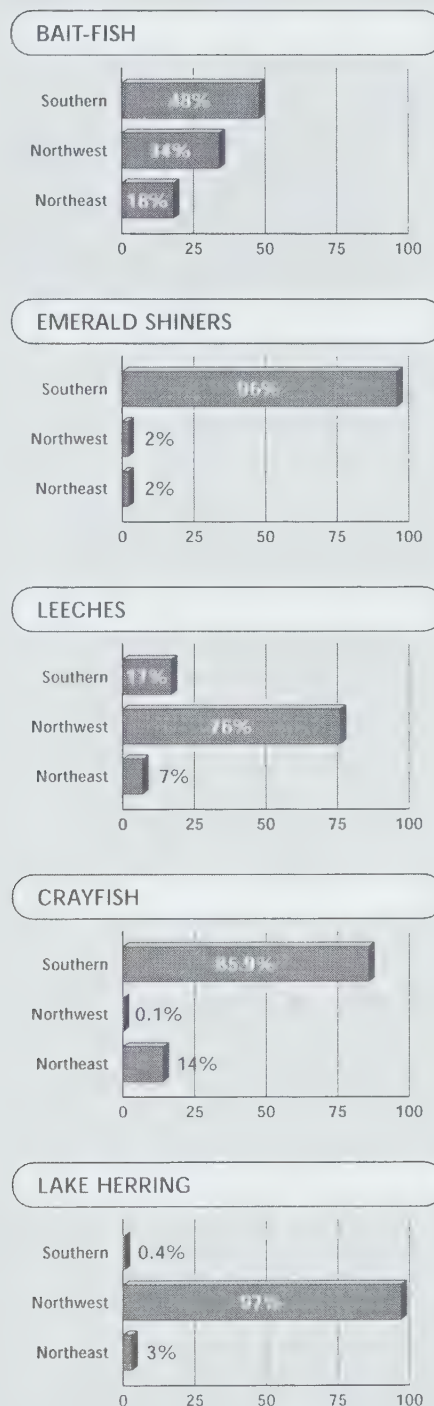
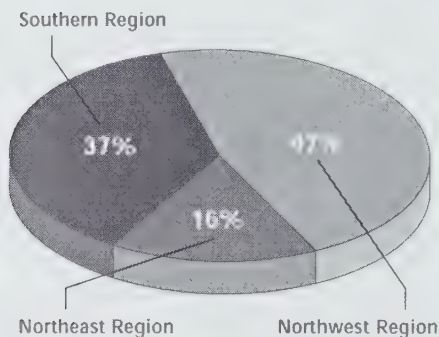
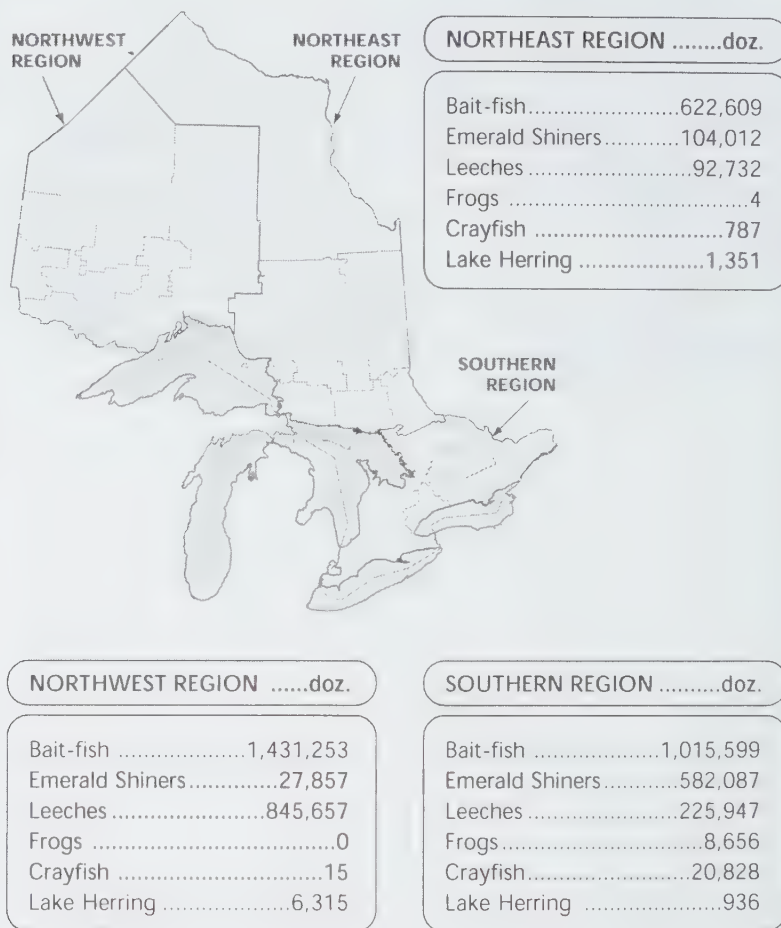


Figure 10

Proportion of total bait harvest sold in the three OMNR Regions, 2002.



The total amount of bait sold in dozens in each OMNR Region by type is shown below.



Although the NWR only accounts for 27% of the total bait harvested, it accounts for almost half of the bait sold in the province (Figure 10). This difference is largely due to the high volume of leeches sold in the NWR compared to the other two regions. The NER harvests about 12% of the bait in the province but sells about 16%. This may be due to import of bait into NER from SR. This also explains the lower amount of sales in SR (37%) compared to harvest (61%) as some bait, mostly emerald shiners, are sold in northern Ontario and large volumes are exported to the United States. It is also possible that these discrepancies are due, in large part, to deficiencies in reporting.

THE VALUE OF BAIT SALES IN ONTARIO

Similarly to the difficulty in obtaining reliable harvest information, it is also difficult to obtain accurate sales information for the same reasons. For example, in 1980 licensed bait-fish harvesters and dealers in Ontario reported only \$4.3 million in sales (Toth, 1983), whereas anglers in the province reported spending \$12.4 million on bait-fish (Bedi and Clifford, 1982). In another study comparing harvester and dealer returns in northwestern Ontario (Hildebrandt-Young, 1981), sales at the retail level were much lower than the wholesale cost to the bait dealer. This suggests that either dealers are selling bait-fish at a loss, or data were not correctly reported, which is a more likely scenario (Goodchild, 1996). Also, some tourist camps provide bait as part of their accommodation package and may not report selling bait.

Litvak and Mandrak (1993) believed that their estimate of the value of the industry in Ontario for 1985 was conservative at US \$29 million or about \$40 million Canadian based on 11.4 million dozen bait-fish reported harvested at US \$2.50 per dozen. No other bait species were included in the estimate.

Figure 11 shows that the total value of the retail bait industry for 2002 is approximately \$19.2 million. The true retail value of the bait industry in Ontario is probably in excess of \$20 million annually.

Bait-fish are by far the most important bait type comprising well over half of the total provincial value (Figure 12). Leeches are a very important part of the bait industry especially in northwestern Ontario. Emerald shiners are a valuable species of bait-fish representing about 13% of the total value of the bait sold in the province. The other three bait types, frogs, crayfish and herring are very small components of the industry although they have some regional importance (e.g., frogs in SR and lake herring in NWR).

Figure 13 shows the total value of retail sales in OMNR's regions in 2002. As expected, the percentages are very similar to the percentage numbers of bait sold in each region (Figure 10).

Figure 11

Retail value of bait sold by type in Ontario, 2002.

TOTAL VALUE	
Bait-fish	\$10,969,827
Emerald Shiners	\$2,492,606
Leeches	\$5,478,851
Frogs.....	\$59,640
Crayfish	\$62,334
Lake Herring	\$65,439

Figure 12

Relative contribution of each bait type in terms of retail value to the industry, Ontario, 2002

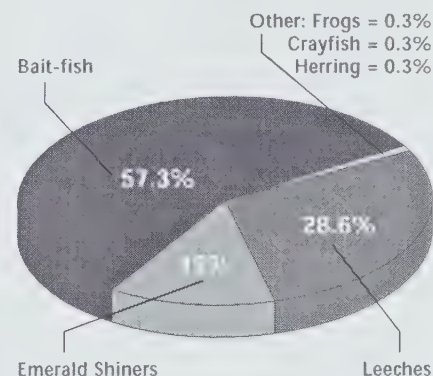


Figure 13

Total value of retail sales in OMNR's regions in 2002.

REGION.....	VALUE.....	% of TOTAL
NWR	\$ 8,572,283	44.8
NER.....	\$ 3,052,388	16.0
SR	\$ 7,504,727	39.2
Total	\$ 19,129,398	100.0

Despite efforts to increase the accuracy of the annual returns, problems still exist. A further joint BAO and OMNR review should be conducted to look at ways of improving the accuracy and completeness of licensing and reporting.

SUMMARY

The live bait industry in Ontario is a large and diverse fishery spread across the province. About 1,400 licences are issued each year and bait harvesters report harvesting over 5.5 million dozens of bait annually. Bait-fish, leeches and emerald shiners are the most important species to the bait industry in Ontario. Frogs, crayfish, and lake herring, are a minor component of the bait industry but have regional and individual importance. About 4.8 million dozens of bait are sold each year for a total retail value of about \$20 million.

Despite efforts to increase the accuracy of the annual returns, problems still exist. For example, the numbers of bait sold for some species (e.g, frogs) is higher than the reported harvest. There appear to be instances of underreporting at both the harvest and retail levels indicating that the true harvest and value of the bait industry is higher than this report suggests.

A further joint BAO and OMNR review should be conducted to look at ways of improving the accuracy and completeness of licensing and reporting. More consistent and effective compliance by OMNR is also needed to ensure all returns are completed and are submitted for the provincial status report.

ACKNOWLEDGEMENTS

This report is based on the annual returns submitted by commercial bait operators across Ontario. The returns are forwarded to the OMNR licence issuing offices and a copy is forwarded to Fisheries Section in Peterborough. They are reviewed and forwarded to the BAO office in Peterborough where Jan Linton enters all the data and prepares a detailed spreadsheet that allows the data to be summarized. Chris Brousseau, Fisheries Section, compiled the information and prepared this report. Many thanks to all those OMNR staff and bait operators who contributed to this report and the BAO staff and directors for their assistance in preparing this report.

REFERENCES

- Bedi, N. and P. Clifford.** 1982. Methodology and selected results for the 1980 surveys of Ontario's resident and non-resident sport fishermen. Ontario Ministry of Natural Resources. 149 p.
- Desjardine, R.** 1978. A management strategy for bait fish in Lake Simcoe. Report No. 78-6, Ontario Ministry of Natural Resources. 44 p.
- Goodchild, C.** 1996. Live Baitfish: an analysis of the value of the industry, ecological risks, and current management strategies in Canada and selected American states, with emphasis on Ontario. Ontario Ministry of Natural Resources Report. Peterborough. 65 p.
- Hildebrandt-Young & Associates Ltd.** 1981. Profile of the bait fish industry in northwestern Ontario. Report prepared for Ontario Ministry of Natural Resources. 218 p.
- Litvak, M.K. and N.E. Mandrak.** 1993. Ecology of freshwater baitfish use in Canada and the United States. Fisheries 18 (12): 6-13.
- Ontario Ministry of Natural Resources.** 2003. Ontario Commercial Bait Licences Statistical Report, 2003. Fisheries Section. Peterborough. 9 p.
- Payne, N.R.** 1965. The use and management of bait fishes in Ontario. Ontario Ministry of Natural Resources. Peterborough. 62 p.
- Portt, C.B.** 1985. The effects of depth and harvest on bait fish in southern Ontario streams. Ontario fisheries technical report series, No. 15. Ontario Ministry of Natural Resources. Peterborough. 2 p.
- Thede, M.** 1998. Administrative Practices for Harvesting Bait in Ontario. Ontario Ministry of Natural Resources. Peterborough. 14 p.
- Toth, G.** 1983. Status of the commercial baitfish industry in Ontario. Ontario Ministry of Natural Resources Report. Peterborough. 39 p.
- Wallace, R.G.** 1976. About Bait-Fish in Ontario. Ontario Ministry of Natural Resources, Commercial Fish and Fur Branch. Toronto. 54 p.

APPENDIX II: BAIT HARVEST DAILY LOG

: 16 :

APPENDIX III: ANNUAL REPORTS FOR HARVESTERS



Ontario

Ministry of
Natural Resources
Division des
Ressources naturelles

Annual Report for Commercial Bait Harvesting
Rapport annuel pour les récolteurs
commerciaux d'appâts

List all bait harvest areas below.

Énumérez toutes les zones de
récolte d'appâts ci-dessous.

Please print

Veuillez écrire en caractères d'imprimerie

Submit your completed form to your licensee issuer by January 31 following the year of expiry.

Use extra forms as necessary.

Présentez votre formulaire rempli à votre délivreur de permis avant le 31 janvier suivant l'année d'expiration.

Utilisez des formulaires supplémentaires le cas échéant.

Lesson Title: _____
 Date: _____

100

Report Year:
Analysis version: 1.00 10/10/2007

Notes on Contributors

L. and D. were 1.00 and 0.99, respectively.

First Name / Surname

Abstract: Purpose: 1. The current research

More of the distance
the person's

Report all bait harvested in each Bait Harvest Area (BHA) in either dozens, gallons or pounds. If no bait is harvested in a BHA, write "NIL" for that BHA.

Indiquez tous les appâts récoltés dans chaque zone de récolte d'appâts (ZRA) en douzaines, gallons ou livres. Si aucun appât n'est récolté dans une ZRA, inscrivez « néant » pour cette ZRA.

[illegible]

This Report contains a complete and accurate statement of Commercial bale harvesting operations carried out under my licence for the yearly period above.

Ce rapport renferme un relevé complet et exact des activités commerciales de récolte d'appâts réalisées en vertu de mon permis pendant la période d'un an indiquée ci-dessus.

Education and Employment (1994)

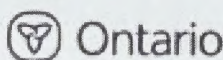
Figure 10. The change of the average of the α and β angles of the $\text{C}=\text{C}$ double bond in the polymerization of $\text{C}_6\text{H}_5\text{C}\equiv\text{CH}$ with $\text{C}_6\text{H}_5\text{C}\equiv\text{C}-\text{C}_6\text{H}_5$ as a function of the polymerization time.

55. *Signature of Applicant* _____ *Signature of Officer* _____

104

49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1

81293-71 05-20-09



Ministry of
Natural Resources
Winnipeg, MB
S2N 3A5, Canada

Annual Report for Commercial Bait Dealing
Rapport annuel pour les vendeurs
commerciaux d'appâts

This report is for retail sales only.

Ce rapport est pour les ventes au détail seulement.

Please print
Veuillez écrire en caractères d'imprimerie

Submit your completed form to your licence issuer by January 31 following the year of expiry. Use extra forms as necessary.

Présentez votre formulaire rempli à votre
délivreur de permis avant le 31 janvier suivant
l'année d'expiration.

Utiliser des formulaires additionnels le cas échéant

Location No.
In the center

District

Report Year:
 Starting year: 1990

Nome e Cognome _____ Localidade / Nome da Unidade _____
 Licenciado(a) _____
 Assinatura do(a) Mestre(a) da disciplina _____

Friedl, H. / Friedl, A.

Miklós, Péter, and Károlyi, András

Report all retail Bait sold and the retail value of all bait by month in either dozens, gallons or pounds.
Indiquez tous les appâts vendus au détail chaque mois et leur valeur de détail en douzaines, gallons ou livres.

[illegible]

This Report contains a complete and accurate statement of commercial bank dealing operations carried out under my licence for the yearly period above.

Le rapport renferme un relevé complet et exact des activités commerciales de vente d'appâts réalisées en vertu de max permis pendant la période d'un an indiquée ci-dessus.

Palmer et al. / *Aggression* 17(4)

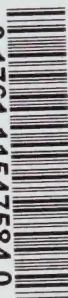
From the 18th to the 20th century, most of the population of the region was engaged in agriculture.

Signature of _____ / Signature of the Treasurer or Secretary

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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812

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